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Electron Spin Resonance Study of Electrons Trapped in Solid Molecular Hydrogen Films

Sheludiakov S., Ahokas J., Järvinen J., Vainio O., Lehtonen L., Zvezdov D., Khmelenko V., Lee D., Vasiliev S.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2015, Springer Science+Business Media New York.We report on the measurements of electrons trapped in solid molecular films of H (Formula presented.) , HD, and D (Formula presented.). A narrow ESR line associated with the trapped electrons was detected with (Formula presented.) , which turned out to be shifted by (Formula presented.) 0.3 G from the free electron resonance. Comparison is made with earlier measurements where a similar line has been seen. In addition, for a (Formula presented.) mixture, after raising the temperature above 1 K, we observe a strong line at the location of the electron cyclotron resonance. The line amplitude is dependent on temperature and has an activation energy of 26 K. We believe that at elevated temperatures, electrons diffuse from the bulk of the film to the surface.

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